

**Kentucky**  
**Agricultural Experiment Station**  
**University of Kentucky**

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**An Economic Study of 270 Farms in Union and  
Henderson Counties**

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**BULLETIN NO. 261**



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## SUMMARY.

This report presents the results of a study of 270 farms which was made in the summer of 1924. These farms were located in Union County and the adjoining section of Western Henderson County. The period covered was the farm year of 1923 and the study included an analysis of the capital investment, crop acreage, and live stock, farm receipts, expenses and net income of each operator. The survey method was used in the study and the records were gotten by men who were technically trained in agriculture and accounting and who had a thorough practical knowledge of farming.

The chief purpose of the study was to find out the most important factors which determined the profitability of farming in this section and to make this information available to farmers in the large area of which the region is typical, so that they may use the data for checking and modifying their farm business organizations to secure more profitable results.

A significant point brought out by the investigation is the great difference in the net earnings of farmers operating in this territory. The net earnings of the 270 farmers averaged \$465, while those of the best twelve farmers averaged \$3,058.

The net earnings included the value of garden products, dairy products, and poultry products, meat, meal, wood and other perquisites furnished by the farm for family use. The average value of these perquisites was \$332 per farm.

The average capital investment per farm, including the dwelling house, was \$17,270. Excluding the dwelling house, the capital investment was \$15,234.

The average farm receipts were \$2,995 per farm. This figure included the cropper's share of the tobacco and other crops raised on the farms. The average expenses were \$1,616 per farm. This included the value of the cropper's share of crops charged as cropper labor, and also depreciation on buildings and machinery, decrease in inventories of feeds and supplies, and unpaid family labor.

The factors which exerted the greatest influence on farm profits were: Efficient labor utilization as measured by total labor accomplished per man.

Control of expenses and low cost of production as measured by the ratio of expenses per \$100 receipts.

Volume of sales per 100 acres.

Good crop yields.

Good returns from live stock, as measured by returns from live stock per dollar's worth of feed fed.

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## BULLETIN NO. 261

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### An Economic Study of 270 Farms in Union and Henderson Counties

W. D. NICHOLLS\*

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#### CONDITIONS IN THE REGION STUDIED.

Union County and Western Henderson County occupy one of the best agricultural areas in Western Kentucky. The area is located in the western coal measures and lies about midway between the Green and Cumberland Rivers. It is bordered on the north and west by the Ohio River which, with its tributary streams, drains the territory.

This is one of the oldest settled regions in Western Kentucky, the first permanent settlement having been made about 1805. Most of the earliest settlers came from Virginia and North Carolina. Originally the land was occupied by dense forests and the first settlers located on the uplands and ridges. The lowlands and bottoms were occupied by swamps and bogs. Stock raising early became an important industry, hogs and cattle being the most profitable of all the live stock. By the year 1850 wheat had become an important farm crop in the region.

Besides the agricultural interests of the region there are extensive coal mines which employ large numbers of laborers. Because of the influence of the mines on wages they are a disturbing element in the farm labor situation.

The principal towns of the immediate territory studied are Morganfield, with a population of 2,725, Sturgis, with a population of 1,467, and Uniontown, with a population of 1,356. Henderson, a city of 11,452 population, is located twenty-four

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\*Acknowledgment is due Mr. L. C. Brewer, county agricultural agent of Union County, for valuable assistance and co-operation in securing the field data upon which this report is based; to Messrs. R. H. Lickert and N. C. Shiver for work done in securing the records, and to Mr. H. R. Brown for efficient work in securing the field records and tabulating the data.

miles northeast of the territory and Evansville, thirty-six miles northeast. The latter city furnishes the chief market for livestock and grain, while Henderson is the principal market for tobacco. The Evansville and Hopkinsville branch of the Illinois Central Railroad traverses the region. There are but a few miles of hard surfaced roads in the region studied but plans have been perfected to add very considerably to the mileage of improved roads.

The U. S. Bureau of Soils names the Miami Silt Loam, the Waverly Silt Loam, and the Yazoo Clay as the three most extensive soil types of the region.

About two-thirds of the entire area is occupied by the Miami Silt Loam which is known locally as "the uplands". This soil varies from almost level in some places to hilly in other places. It is six to twelve inches in depth and is well drained, but its texture is such as to cause it to wash badly on the steep slopes. Wheat, corn, grass, and tobacco are largely grown on this type of soil and give good yields. In normal seasons corn produces about 35 bushels per acre and in good seasons 50 bushels per acre, the normal yield of wheat is 18 to 20 bushels per acre and of tobacco 1,100 to 1,200 pounds. Orchard fruits also do well on this soil.

The Waverly Silt Loam, or "black bottom soil" occupies about 11 per cent of the region, mainly in the level country southward from the Pond Fork Creek and the eastern section along the broad bottom lands of Highland and Casey Creeks. This soil is a highly fertile black silt loam twelve to fifteen inches in depth and is underlaid by a black clay loam subsoil. Much of it requires underdrainage. Practically all crops grown in the region do well on this type of soil. Corn averages 60 bushels per acre, wheat 20 bushels and tobacco 1,300 pounds. Grass also grows well on it.

The Yazoo Clay occupies about 10½ per cent of the area and is mostly bottom land stretching along the Ohio River. Because of the liability of this to overflow it is planted almost exclusively to corn, a normal yield of which is about 45 bushels per acre and 60 to 75 bushels in favorable seasons.

## NET EARNINGS OF FARM OPERATORS.

The net earnings of each of the 270 farm operators were determined. This figure indicates the net return obtained by each operator for his labor and management during the year and is regarded as an index of his efficiency as a farmer. A summary of investments, receipts, expenses and net earnings of all the operators is shown in Table 1. The table also shows comparison of these factors on the average farm and the twelve most profitable farms. The latter had a 50.6 per cent greater capital investment, 122.5 per cent greater farm receipts and 37.9 per cent greater farm expenses than the average. Their net earnings were \$3,058 as compared with \$465 for the average operator.

Table 1. SUMMARY OF BUSINESS ANALYSIS OF 270 FARMS AND OF THE BEST 12 FARMS.

|  | Average of<br>270 farms | Average<br>of best<br>12 farms |
|--|-------------------------|--------------------------------|
| Farm investment (operator's dwelling not<br>included) .....                            | \$15,234                | \$22,954                       |
| Farm receipts* .....   | 2,995                   | 6,665                          |
| Farm expenses .....  | 1,616                   | 2,230                          |
| Net receipts (line 3 subtracted from line 2).....                                      | 1,379                   | 4,435                          |
| Interest on farm investment, at 6 per cent.....  | 914                     | 1,377                          |
| Farmers' net earnings for labor and management<br>(line 5 subtracted from line 4)..... | 465                     | 3,058                          |
| Value of food and other perquisites furnished by<br>farm for the family living .....   | 299                     | 331                            |

## CAPITAL INVESTMENT.

An analysis of capital investment of the farms is shown in Table 2.

\*Includes value of perquisites furnished by the farm for the family living.



Table 2. DISTRIBUTION OF CAPITAL INVESTMENT.

|                                       | Average of<br>270 farms | Per acre investment | Per cent<br>of total<br>investment |
|---------------------------------------|-------------------------|---------------------|------------------------------------|
| Investment in land .....              | \$10,796                | \$53.5              | 62.5                               |
| Investment in dwelling .....          | 2,036                   | 10.1                | 11.8                               |
| Investment in other buildings .....   | 1,814                   | 9.0                 | 10.5                               |
| Investment in machinery .....         | 533                     | 2.6                 | 3.1                                |
| Investment in live stock .....        | 1,293                   | 6.4                 | 7.5                                |
| Investment in feed and supplies ..... | 798                     | 4.0                 | 4.6                                |
| Total investment .....                | 17,270                  | 85.6                | 100.0                              |
| Total business investment† .....      | 15,234                  | 75.5                | 88.2                               |

It will be noted that land represented 62½ per cent of the total investment, the dwelling house nearly 12 per cent, other buildings 10½ per cent, machinery 3.1 per cent, live stock 7.5 per cent, feed and supplies 4.6 per cent.

### FARM RECEIPTS.

Farm receipts are classified in Table 3 according to their sources. Of the total receipts crops furnished 42.34 per cent, live stock 33.88 per cent, other items 6.4 per cent, increase in feed and supplies 7.4 per cent.

Sales of corn amounted to \$401 or 13.37 per cent of the total receipts; hay, \$169 or 5.64 per cent; wheat, \$218 or 7.29 per cent; tobacco, \$427 or 14.28 per cent; other crops, \$53 or 1.77 per cent; dairy products and dairy stock, \$152 or 5.09 per cent; beef cattle, \$237 or 7.92 per cent; sheep, \$24 or .81 per cent; hogs, \$515 or 17.2 per cent; poultry \$99 or 3.31 per cent.

Receipts of \$191.49 from other sources consisted of cash rent, wood, lumber and miscellaneous items.

†Total investment minus dwelling.



Table 3. DISTRIBUTION OF RECEIPTS.

|  | Average    | Per cent<br>of total<br>receipts |
|--|------------|----------------------------------|
| Crops .....  | \$1,268.34 | 42.34                            |
| Live stock .....   | 1014.67    | 33.88                            |
| Other sources .....  | 191.49     | 6.40                             |
| Increase in feed and supplies .....                          | 221.73     | 7.40                             |
| Value of things furnished by the farm to the<br>family ..... | 299.00     | 9.98                             |
| Total receipts .....   | 2,995.23   | 100.00                           |
| Receipts:  |            |                                  |
| Corn .....   | \$400.54   | 13.37                            |
| Hay .....  | 169.06     | 5.64                             |
| Wheat .....  | 218.22     | 7.29                             |
| Tobacco .....  | 427.43     | 14.27                            |
| Other crops .....  | 53.09      | 1.77                             |
| Cows .....   | 152.49     | 5.09                             |
| Cattle .....   | 237.35     | 7.92                             |
| Sheep .....  | 24.38      | .81                              |
| Hogs .....   | 514.87     | 17.20                            |
| Poultry .....  | 99.32      | 3.32                             |
| Other live stock .....                                       | 1.57       | .05                              |
| Value of products furnished family .....                     | 299.00     | 9.98                             |
| Horses* .....  | —15.31     | —51                              |
| Other receipts .....   | 413.22     | 13.80                            |

### THE VALUE OF PRODUCTS FURNISHED BY THE FARM FOR THE FAMILY LIVING.

Table 4 shows the value of products furnished by the farm to the family living. On the 270 farms it will be noted that the meat used had an average farm value of \$119; milk, cream, butter and eggs, \$117; vegetables, fruit, potatoes and wheat, \$63; and wood, approximately, \$1.

Table 4. VALUE OF PRODUCTS FURNISHED BY THE FARM FOR THE FAMILY USE.

|                                 |         |          |
|---------------------------------|---------|----------|
| Butter .....                    | \$42.77 |          |
| Butter fat and cream .....      | 25.20   |          |
| Milk .....                      | 25.31   |          |
| Eggs .....                      | 23.36   |          |
| Total live stock products ..... |         | \$116.64 |

\*Loss.

|                             |         |          |
|-----------------------------|---------|----------|
| Wheat .....                 | \$ 1.39 |          |
| Potatoes .....              | 2.92    |          |
| Fruit .....                 | 9.80    |          |
| Garden and vegetables ..... | 48.56   |          |
| Total crops .....           |         | \$62.67  |
| Hogs .....                  | 81.52   |          |
| Poultry .....               | 36.30   |          |
| Other meat .....            | 1.33    |          |
| Total meats .....           |         | \$119.15 |
| Wood .....                  |         | .93      |

### FARM EXPENSES.

Farm expenses, in the order of their importance, consisted of current expenses, cropper labor, depreciation on buildings and machinery, unpaid family labor, decreased inventories of feed and supplies, and decreased inventories of live stock. The amounts of these expenses and the relation of each to the total expenses are shown in Table 5.

Table 5. DISTRIBUTION OF EXPENSES.

|  | Amount<br>of total | Per cent<br>of total |
|--|--------------------|----------------------|
| Current expenses .....                             | \$910.76           | 56.34                |
| Cropper labor .....                                | 303.47             | 18.77                |
| Depreciation on buildings, fences and machinery... | 159.83             | 9.89                 |
| Unpaid family labor .....                          | 146.85             | 9.08                 |
| Decrease in feed and supplies .....                | 94.03              | 5.82                 |
| Decrease in live stock .....                       | 1.57               | .10                  |
| Total expense .....                                | \$1,616.51         | 100.00               |

### CURRENT EXPENSES.

The distribution of current expenses is shown in Table 6. The largest items were hired labor which represents 29 per cent of the total current expenses, taxes 19 per cent, purchased feeds, 15 per cent, and seeds about 6 per cent. A study of Tables 5 and 6 may be suggestive to farmers as to points wherein they may reduce costs.

Table 6. DISTRIBUTION OF CURRENT EXPENSES.

|                                 | Amount<br>of total | Per cent<br>of total |
|---------------------------------|--------------------|----------------------|
| Hired labor .....               | \$262.23           | 28.79                |
| Board and rations .....         | 13.03              | 1.43                 |
| Machinery repairs .....         | 4.37               | .48                  |
| Tenant house repairs .....      | 1.24               | .14                  |
| Other repairs .....             | 3.15               | .35                  |
| Drain and terrace repairs ..... | 10.06              | 1.10                 |
| Fence repairs .....             | 10.50              | 1.15                 |
| Feed: roughage .....            | 29.54              | 3.24                 |
| Feed: grain .....               | 108.00             | 11.86                |
| Pasture .....                   | 1.81               | .20                  |
| Silo filling .....              | 2.05               | .23                  |
| Horse shoeing .....             | 11.91              | 1.31                 |
| Veterinary, etc. ....           | 11.71              | 1.29                 |
| Breeding fees .....             | 2.05               | .23                  |
| Registry fees .....             | .59                | .06                  |
| Seeds .....                     | 52.67              | 5.78                 |
| Fertilizer W. land .....        | 18.43              | 2.02                 |
| Fertilizer Cr. land .....       | 1.10               | .12                  |
| Spray material .....            | 3.83               | .42                  |
| Twine .....                     | 4.51               | .50                  |
| Threshing .....                 | 26.13              | 2.87                 |
| Baling and wire .....           | 30.89              | 3.34                 |
| Other machine work hired .....  | .93                | .10                  |
| Fuel and oil for farm use ..... | 21.05              | 2.31                 |
| Auto for farm use .....         | 26.16              | 2.87                 |
| Telephone .....                 | 9.56               | 1.05                 |
| Bags, crates, etc. ....         | 2.59               | .28                  |
| Insurance (other) .....         | 39.83              | 4.37                 |
| Taxes .....                     | 173.79             | 19.08                |
| Farm Bureau dues .....          | 4.07               | .45                  |
| Other current expenses .....    | 22.98              | 2.53                 |
| Total current expenses.....     | \$910.76           | 100.00               |

# CASH AND NON-CASH RECEIPTS AND EXPENSES.

Of the \$2,995 classed as total receipts certain items did not represent actual cash. These were: Increased inventories, \$308; "sales" of tenants' crops, \$295; "sales" of landlords' crops, \$75; and other non-cash receipts, \$0.50; making a total of \$678 and leaving \$2,317 in cash receipts. (See Table 7.)

Likewise, not all the \$1,616 classified as total expense consisted of actual cash items. The non-cash items consisted of cropper labor, \$303; decreased inventories, \$276; unpaid family labor, \$147; depreciation on other buildings, \$54; depreciation on machinery, \$53; depreciation on fences, \$54; making a total of \$888 of non-cash expenses. This leaves \$728 of expenses represented by cash items.

Table 7. NON-CASH RECEIPTS AND EXPENSES.

| NON-CASH RECEIPTS                    |          |
|--------------------------------------|----------|
| Increase in inventories .....        | \$308.24 |
| "Sales" of tenant crops .....        | 294.63   |
| "Sales" of landlord crops .....      | 75.06    |
| Other non-cash receipts .....        | .50      |
| Total non-cash receipts .....        | \$678.43 |
| NON-CASH EXPENSES                    |          |
| Cropper labor .....                  | \$303.47 |
| Decrease inventories .....           | 276.17   |
| Unpaid family labor .....            | 146.84   |
| Depreciation (other buildings) ..... | 53.61    |
| Depreciation (machinery) .....       | 53.25    |
| Depreciation (fences) .....          | 54.39    |
| Total non-cash expenses .....        | \$887.73 |

### DISTRIBUTION OF FARM ACREAGE.

Table 8 shows the distribution of total farm land in crops, pasture and waste. A little more than half of the acreage was in crops and a little more than half the crop land was in corn. The acreage of wheat was about one-third that of corn, and of hay about two-fifths that of corn.

Table 8. DISTRIBUTION OF FARM ACREAGE.

|                        |        |
|------------------------|--------|
| Acres in crops .....   | 109.15 |
| Acres in corn .....    | 57.80  |
| Acres in wheat .....   | 18.83  |
| Acres in hay .....     | 22.68  |
| Acres in tobacco ..... | 3.89   |



|                        |      |        |
|------------------------|------|--------|
| Acres in oats .....    | 3.70 |        |
| Acres in rye .....     | .71  |        |
| Acres in sorghum ..... | .05  |        |
| Acres in orchard ..... | 1.00 |        |
| Acres in garden .....  | .49  |        |
| Acres in pasture ..... |      | 82.31  |
| Acres in waste .....   |      | 10.45  |
| Total acres .....      |      | 201.91 |

### LIVE STOCK.

There was a total of 29.45 live stock units\* on the average farm. The most important class of live stock was hogs of which there were almost exactly seven units. There were about six units of mature dairy stock and two units of young dairy stock, 5.1 units of beef cattle, 1.1 units of poultry, and 7.3 units of horse stock.

### PRICES DURING THE PERIOD STUDIED.

The average farm prices of feeds and grains were as follows: Corn, 80 cents per bushel; oats, 60 cents per bushel; wheat, \$1.10 per bushel; loose hay, \$15.00 per ton; baled hay, \$18.00 per ton; fodder, 20 cents per shock; bran, \$40.00 per ton; cotton seed meal, \$48.00 per ton.

The average prices for live stock on farms of the section were: Fat cattle, \$7.50 per hundredweight; stock cattle, \$7.00 per hundredweight; calves, \$6.25 per hundredweight; fat hogs, \$7.00 per hundredweight; stock hogs, \$5.50 to \$6.00 per hundredweight.

The average farm price of butter was 40 cents per pound; eggs, 25 cents to 35 cents per dozen; whole milk, 20 cents per gallon.

### FACTORS INFLUENCING PROFITS.

It has been shown that the net earnings of the most efficient twelve farmers were more than six and a half times those of

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\*A live stock unit or animal unit is the equivalent of a 1000-pound animal. It is represented by 1 cow or horse, 5 hogs, 7 sheep or 100 hens.

the average of all the farmers whose business was analyzed. In an attempt to find the causes of this great difference in earnings the farm records were classified on the basis of factors which might cause differences in profits.

#### INFLUENCE OF EFFICIENCY OF LABOR ON PROFITS.

To determine the efficiency of labor it was necessary to reduce to a common unit of labor requirements the crops grown, the live stock cared for, and other work performed. The unit commonly used in economic studies is the "work unit" which represents approximately a ten-hour day. The term "productive work unit"\* is applied to work on crops and stock which contributes to the total sales of the farm. Work done in caring for work stock and other work which does not contribute to the direct income or sales of the farm is not included in computing the total productive work units.

The total productive labor performed on each farm was converted into productive work units, which figure was divided by the figure representing the "man equivalent" for the farm during the year. This gave the number of productive work units accomplished per man for each farm. The average number of productive work units for all farms was approximately 219, and on the best twelve farms, 264.

The marked influence of high productivity of farm workers is shown in Table 9. The 67 operators who accomplished the least work per man made upon an average but \$196 for their year's labor and management. The next higher group made \$456, the next higher \$493 and the next higher \$633. The group of 53 operators who secured the highest labor accomplishment per man made the highest net earnings, \$656, as compared with \$196 made by farmers of the lowest labor efficiency group.

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\*A full discussion of the method of computing total work units is given in Kentucky Station Bulletin 253, Pp. 47-48.

Table 9. INFLUENCE OF LABOR EFFICIENCY ON FARM PROFITS.

| Productive work units per man<br>(A work unit is approximately<br>the equivalent of a 10-hour<br>day). | Number<br>of farms | Average<br>productive<br>work units<br>per man | Net<br>earnings |
|--|--------------------|--|-----------------|
| Under 169 work units .....   | 67                 | 131  | \$196           |
| 169-211 units .....  | 49                 | 190  | 456             |
| 211-253 units .....  | 62                 | 230  | 493             |
| 253-295 units .....  | 39                 | 272  | 633             |
| Over 295 units .....   | 53                 | 347  | 656             |

INFLUENCE OF CONTROL OF COSTS ON PROFITS.

The study showed that the amount of expenses incurred in relation to receipts exerted a very marked influence on farm profits in this area. Table 10 presents this relationship.

There were 55 farms whose average expenses were 21 cents per \$1.00 of receipts. The operators of this group secured \$1,182 as earnings for their year's work and management.

There were 51 farms with expenses averaging 37 cents per \$1.00 of receipts. Their operators secured net earnings of \$1,174 for the year. There were 55 operators who had farm expenses averaging 49 cents per \$1.00 receipts. These made \$716. There were 52 operators with expenses averaging 62 cents per \$1.00 receipts and the average net earnings of these were \$227.

The least efficient group in this classification spent an average of 93 cents for each \$1.00 of receipts and the average operator of this group had net earnings of minus \$862 for his year's work and management.

Table 10. INFLUENCE OF CONTROL OF COSTS ON FARM PROFITS.

| Expenses per \$1.00<br>of receipts | Number<br>of farms | Average<br>expenses<br>per \$1.00<br>receipts | Net<br>earnings |
|------------------------------------|--------------------|---|-----------------|
| Under 30 cents .....               | 55                 | 21c   | \$1,182         |
| 30 cents to 43 cents .....         | 51                 | 37c   | 1,147           |
| 43 cents to 56 cents .....         | 55                 | 49c   | 716             |
| 56 cents to 69 cents .....         | 52                 | 62c   | 227             |
| Over 69 cents .....                | 57                 | 93c   | —862            |

## INFLUENCE OF VOLUME OF RECEIPTS ON PROFITS.

Some of the farms in this study secured a large volume of receipts per 100 acres operated, others a very small volume of receipts. This factor had a large effect on their net earnings.

There were 23 operators whose receipts exceeded \$2,350 per 100 acres operated. These had net earnings of \$1,906.

There were 63 operators (the lowest group) whose receipts were less than \$850 per 100 acres operated and the average net earnings of this group were minus \$377.

Between these two extremes the group of 90 operators with receipts ranging between \$850 and \$1,350 per farm secured net earnings averaging \$179; the 60 with receipts ranging from \$1,350 to \$1,850 had net earnings which averaged \$863; the 34 with receipts ranging from \$1,850 to \$2,350 had net earnings which averaged \$1,091.

Table 11. INFLUENCE OF VOLUME OF RECEIPTS ON PROFITS.

| Receipts per 100 acres<br>Range | Average receipts<br>per 100 acres<br>operated | Number<br>of farms | Net<br>earnings |
|---------------------------------|---|--------------------|-----------------|
| Under \$850 .....               | \$ 602  | 63                 | \$—377          |
| 850 to 1,350 .....              | 1,092   | 90                 | 179             |
| 1,350 to 1,850 .....            | 1,552   | 60                 | 863             |
| 1,850 to 2,350 .....            | 2,033   | 34                 | 1,091           |
| Over 2,350 .....                | 4,865   | 23                 | 1,906           |

## INFLUENCE OF CROP YIELDS ON PROFITS.

The figures obtained in this study showed a marked effect exerted by the size of crop yields on the profits secured by farm operators.

The average yield for the most important crops on the 270 farms and on the most successful 12 farms are shown in Table 12.



Table 12. AVERAGE CROP YIELDS OF ALL FARMS STUDIED AND THE BEST 12 FARMS.

|                                 | Average of<br>270 farms | Average<br>of best<br>12 farms |
|---------------------------------|-------------------------|--------------------------------|
| Yield of corn per acre .....    | 33.87 bu.               | 37.28 bu.                      |
| Yield of tobacco per acre ..... | 924.96 lbs.             | 1,036 lbs.                     |
| Yield of wheat per acre .....   | 13.69 bu.               | 15.78 bu.                      |
| Yield of hay per acre .....     | 1¼ tons                 | 1¼ tons.                       |

Investigators in problems of farm organization have adopted the "crop index" as a measure for comparing the composite production of crops on any one farm with that of the community average. The latter is considered as 100. Suppose a given farmer had:\*

20 acres of corn yielding 50 bu. per acre or a total of 1,000 bu.  
10 acres of tobacco yielding 1,500 lbs. per acre or a total of 15,000 lbs.  
30 acres of wheat yielding 10 bu. per acre or a total of 300 bu.  
30 acres of hay yielding 1½ tons per acre or a total of 45 tons.  
90 acres total acreage.

Suppose the average yield per acre of all farms in the community were: Corn, 40 bu.; tobacco, 1,000 lbs.; wheat, 15 bu.; hay, 1 ton. Then to produce

1,000 bu. of corn would require.....25 acres (1,000÷40)  
15,000 lbs. of tobacco would require..15 acres (15,000÷1,000)  
300 bu. of wheat would require.....20 acres (300÷15)  
45 tons of hay would require.....45 acres (45÷1)  
Or a total of .....105 acres

The crop index of this farm would be determined by dividing 105 acres, the average acreage required to produce the amounts of the crops produced on this farm, by the actual acreage used on this farm to produce those amounts. This gives

\*Kentucky Bulletin 253. "A study of Farm Organization and Management in Mason and Fleming Counties."

116.7 which means that the yields of the crops on this farm are 116.7 per cent of those of the community. That is, the crop index of the farm is 116.7.

Table 13. INFLUENCE OF CROP YIELDS ON FARM PROFITS.

| Crop index (Average crop yield of all farms=100) | Number of farms | Net earnings |
|--|-----------------|--------------|
| Under 79 per cent .....                          | 67              | \$220        |
| 79 per cent to 91 per cent .....                 | 48              | 346          |
| 91 per cent to 103 per cent .....                | 47              | 419          |
| 103 per cent to 115 per cent .....               | 50              | 501          |
| Over 115 per cent .....                          | 58              | 853          |

Table 13 shows the influence of crop yields on the profits of the farm operators whose business was analyzed in this study.

There was a group of 67 operators with low crop yields (averaging 79 per cent of the community average). The average earnings of these operators were but \$220 for the year.

There was a group of operators having high crop yields (more than 15 per cent above the average yields of the community). The average net earnings of these operators were \$853.

The other groups in the classification show that profits, on an average, increased as yields increased. The 48 farms with yields ranging between 79 per cent and 91 per cent showed earnings of \$346. The next higher group with yields ranging between 91 per cent and 103 per cent earned \$419 and the groups ranging between 103 per cent and 115 per cent in yields earned \$501.

#### INFLUENCE OF GOOD LIVE STOCK AND FEEDING EFFICIENCY ON PROFITS.

The influence of the productivity of live stock and the feeding efficiency of the 270 farmers was studied. The farms were classified on the basis of returns from live stock per dollar's worth of feed fed. (Table 14.)

On 58 farms there was less than 40 cents returned per dollar's worth of feed fed. The net earnings of these operators was \$119.

On 60 farms there was an average return of \$1.32 for each dollar's worth of feed fed. These operators had net earnings averaging \$1,189.

The other groups in the classification showed that the farmers' net earnings increased as the quality of live stock and feeding efficiency increased.

Table 14: INFLUENCE OF GOOD LIVE STOCK AND FEEDING EFFICIENCY ON PROFITS.

| Receipts per dollar's<br>worth of feed fed | Average receipts<br>per dollar's<br>worth feed fed | Number<br>of farms | Net<br>earnings |
|--|--|--------------------|-----------------|
| Under 40 cents .....                       | .28  | 58                 | \$ 119          |
| 40 cents to 57 cents .....                 | .50  | 53                 | 145             |
| 57 cents to 74 cents .....                 | .65  | 57                 | 386             |
| 74 cents to 91 cents .....                 | .82  | 42                 | 749             |
| Over 91 cents .....                        | \$1.32   | 60                 | 1,189           |

#### WELL BALANCED FARMS MOST PROFITABLE

The five major factors influencing profits in this region were shown by this study to be: (1) labor utilization, (2) control of expenses, (3) volume of sales, (4) crop yields, and (5) productiveness of live stock feeding operations. Some farms were strong in all these points and some in none of them and between these two extremes were farms varying in the number of points in which they made a good showing.

The farms were classified according to the number of these points in which they exceeded the average by 10 per cent or more. The effect on farm profits is shown in Table 15.

Table 15. EFFECT OF NUMBER OF STRONG POINTS IN THE FARM ORGANIZATION ON PROFITS\*.

| Number of strong points   | Number<br>farms | Net<br>earnings |
|---------------------------|-----------------|-----------------|
| No strong points .....    | 52              | \$—474          |
| One strong point .....    | 67              | 80              |
| Two strong points .....   | 58              | 343             |
| Three strong points ..... | 55              | 1,018           |
| Four strong points .....  | 26              | 1,699           |
| Five strong points .....  | 12              | 2,062           |
| All farms .....           | 270             | 465             |

#### CAMPARISON OF EFFICIENCY FACTORS OF INDIVIDU- AL FARMS WITH AVERAGE FARM AND THE MOST SUCCESSFUL FARMS

For the benefit of those who contributed their farm records to this study, a factor sheet was made out for each of the 270 farmers, showing his efficiency in the various factors and comparing his factors with those of the average of all the farms and the best 12 farms. The form used for this purpose is shown in Table 16.

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\*Points are (1) labor utilization, (2) control of expenses, (3) volume of sales, (4) crop yields, and (5) productiveness of live stock feeding operations. "Strong" points are those in which a farm is better than the average by 10 per cent or more.



Table 16. COMPARISON OF YOUR FARM WITH 270 FARMS AND  
THE BEST 12 FARMS.

|  | Average of<br>270 farms | Average<br>of best<br>12 farms |
|--|-------------------------|--------------------------------|
| Net earnings for the year .....                              | 465                     | 3,058                          |
| Total acres operated .....                                   | 201.9                   | 328.8                          |
| Total capital (including dwelling) .....                     | 17,270                  | 24,629                         |
| Total capital (without dwelling) .....                       | 15,234                  | 22,954                         |
| Total farm receipts .....                                    | 2,995                   | 6,665                          |
| Total farm expenses .....                                    | 1,616                   | 2,230                          |
| Receipts per 100 acres operated .....                        | 1,484                   | 2,027                          |
| Expenses per 100 acres operated .....                        | 800                     | 678                            |
| Expenses per \$100 income .....                              | 53.96                   | 33.46                          |
| Crop index .....   | 100                     | 107.7                          |
| Yield of corn per acre .....                                 | 33.87                   | 37.28                          |
| Yield of tobacco per acre .....                              | 924.96                  | 1,036                          |
| Yield of wheat per acre .....                                | 13.69                   | 15.78                          |
| Yield of hay per acre .....                                  | 1¼ Tons                 | 1¼ Tons                        |
| Productive day's work per man .....                          | 218.86                  | 264.33                         |
| Productive day's work per horse .....                        | 53.61                   | 87.81                          |
| Price per pound for tobacco .....                            | 8.5c                    | 10.27c                         |
| Value of things furnished by the farm to the<br>family ..... | 299                     | 331                            |





